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60246-223; 10692**REMARKS**

Claim 42 is objected to because of the extra punctuation at the end of the claim. Claim 42 has been amended to delete the extra period.

Claims 34, 41 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Claims 34, 41 and 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that the specification fails to describe the variable  $x$  in  $Mn_xO_2$ , and the claimed invention is not enabling and is indefinite. Applicant respectfully disagrees.

The claimed invention is enabling and is not indefinite. The variable  $x$  is the number of atoms of manganese in the compound  $Mn_xO_2$ , and one skilled in the art would understand this.  $x$  is a variable that generally is open as to its possibilities.  $x$  denotes any number of atoms of manganese that could bond with two oxygen atoms. Manganese and oxygen only bond together at specific ratios. Therefore, if a compound includes two oxygen atoms, the number  $x$  can represent any number of manganese atoms that are needed to form a compound of manganese oxide including two oxygen atoms. The Examiner states on page 4 of the Final Office Action that  $x$  can be more than one number, whether the number is an integer or a fraction. However, atoms only bond as numbers that are integers and not fractions. Therefore, because of the bonding of manganese and oxygen together, one skilled in the art would know what numbers the variable  $x$  can be. For example,  $x$  can be 1 to form  $MnO_2$ . However, this is only an example. The specification is enabling and is not indefinite. Applicant respectfully requests that the rejection be withdrawn.

Claims 1-28 and 31-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld et al. in view of Kobayashi and/or Hemme et al. Reisfeld teaches a coating of titanium dioxide. The Examiner admits that Reisfeld does not disclose a layered catalytic coating including a first layer of one of a metal/titanium dioxide and a metal compound/titanium dioxide applied on a substrate and a second layer of one of titanium dioxide and metal compound/titanium dioxide applied on the first layer. The Examiner states that Kobayashi and/or Hemme disclose these features, and it would be obvious to employ these features in Reisfeld. The Examiner further states that the specification does not disclose the benefits of arranging each of

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the layers in the claimed order as compared to the generally and randomly applied layers as taught by Kobayashi, and therefore the claimed invention is obvious. Applicant respectfully disagrees.

The claimed invention is not obvious. Neither Kobayashi nor Hemme disclose a layered catalytic coating including a first layer of one of a metal/titanium dioxide and a metal compound/titanium dioxide applied on a substrate and a second layer of one of titanium dioxide and metal compound/titanium dioxide applied on the first layer. Kobayashi only generally discloses a photocatalytic coating of titanium dioxide or titanium dioxide including a metal or metal/oxide. Kobayashi generally discloses that "a plurality of different photocatalyst coating compositions may be provided followed by successive coating of the plurality of different photocatalyst coating compositions on the surface of the substrate." However, Kobayashi does not disclose any specific layers that form a coating, including the claimed layers, and there is no suggestion in Kobayashi to employ the claimed layers to form a coating.

The claimed layers in the claimed order provide benefits that would not be obtained by generally and randomly applying layers on a substrate as disclosed in Kobayashi. Applicant has invented a unique layered coating that provides benefits over the prior art and which allows the coating to be tailored for a specific application. That is, the choice and the selection of the particular layers is inventive. Just randomly and generally applying layers to a substrate would not produce the effect of the claimed invention. There is no suggestion or teaching in Kobayashi to form the coating with the layers and order as claimed.

The Examiner also cited *In re Japikse* 86 USPQ 70, stating that "rearrangement of parts was held to have been obvious." In *In re Japikse*, claims to a hydraulic power press included features directed to a position of a starting switch. The Court held that there is "no invention in shifting the starting switch disclosed by Cannon to a different position since the operation of the device would not thereby be modified." That is, the Court held that moving the position of the starting switch was not a patentable feature because moving the position of the starting switch would not have modified the operation of the device. As disclosed in the specification, each layer provides a different function. For example, titanium dioxide or metal oxide doped titanium dioxide are effective in oxidizing volatile organic compounds and semi-volatile organic compounds to carbon dioxide and water (paragraph 34). Titanium dioxide located with a Group VIII noble metal is highly reactive with low polarity organic compounds (paragraph 48). Gold on titanium dioxide oxidizes carbon monoxide to carbon dioxide (paragraph 38). Each of these

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different layers provide different functions. Therefore, if the layers in a coating were changed or randomly applied, the results produced by the coating would change. That is, the operation of a coating would be modified by changing or modifying the layers. *In re Japikse* relates to a case where operation of the device would not be modified by changing the position of the elements. The claimed invention is not obvious, and Applicant respectfully requests that the rejection be withdrawn.

There is also no suggestion in any of the references to use two substrates with different coatings as claimed in claims 21 to 32. Kobayaski generally discloses using coatings, but does not disclose, suggest or teach using different substrates having different coatings. Therefore, even if combined with Reisfeld, the claimed invention is not obvious.

The claimed invention is not obvious by adding the features of Hemme to Reisfeld or the combination of Reisfeld and Kobayaski. Hemme discloses titanium dioxide doped with a metal compound. Hemme does not disclose layered catalytic coating. Therefore, adding Hemme to Reisfeld or to the combination of Reisfeld and Kobayaski does not disclose a catalytic coating including a first layer including metal/titanium dioxide or metal compound/titanium dioxide on a substrate and a second layer of titanium dioxide or metal compound/titanium dioxide on the first layer. There is no suggestion in Hemme to use the coating in a layered coating. The combination does not disclose, suggest or teach the claimed invention. The claimed invention is not obvious, and Applicant respectfully requests that the rejection be withdrawn.

Claims 29 and 30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld in view of Kobayashi and/or Hemme and further in view of Hirano et al. Claims 29 and 30 depend on patentable independent claim 21 and are allowable for the reasons set forth above. Claims 29 and 30 are not obvious because it is not obvious to provide a fluid purification system including a first substrate with a coating of one of metal/titanium dioxide and metal oxide/titanium dioxide and a second substrate with a coating of one of titanium dioxide and metal compound/titanium dioxide. Claims 29 and 30 recite that a first substrate is attached to a second substrate. Hirano discloses and illustrates substrates 14, 16 and 18 that are separate elements in a photocatalytic purifier 10 and that are spaced and separated by UV lamps 20. Because of the presence of UV lamps 20 between the substrates 14, 16 and 18, the substrates 14, 16 and 18 cannot be secured together as claimed. That is, it is not possible to attach the substrates 14, 16 and 18 together. None of the references teach, suggest or disclose substrates that are secured

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together. Therefore, when combined, the claimed invention is not taught, suggested or disclosed. The claimed invention is not obvious, and Applicant respectfully requests that the rejection be withdrawn.

Thus, claims 1-44 are in condition for allowance. If any additional fees are due, however, the Commissioner is authorized to charge Deposit Account No. 50-1482, in the name of Carlson, Gaskey & Olds, P.C., for any additional fees or credit the account for any overpayment. Therefore, favorable reconsideration and allowance of this application is respectfully requested.

Respectfully Submitted,

CARLSON, GASKEY & OLDS, P.C.

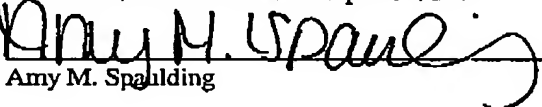


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**CERTIFICATE OF FACSIMILE**

I hereby certify that this Request for Reconsideration and Amendment After Final is being facsimile transmitted to the United States Patent and Trademark Office, 571-273-8300 on April 17, 2006.

  
Amy M. Spaulding